

II.B. IN VITRO CONVERSION: OBTAINING FUEL GAS
I. PROCESSES

PATENTING UPDATE (1/79-8/79)

<u>Patent No.</u>	<u>Assignee & Title</u>
4,132,065	<u>Texaco, Inc.:</u> Production Of H ₂ And CO-Containing Gas Stream And Power
4,132,764	<u>Phillips Petroleum Company:</u> Production Of Carbon Monoxide From Carbonaceous Material And Zinc Oxide
4,133,739	<u>Chevron Research Company:</u> Retorting Process
4,133,825	<u>British Gas Corporation:</u> Production Of Substitute Natural Gas
4,134,740	<u>Texaco, Inc.:</u> Method For Energy Utilization In Producing Synthesis Gas And Recovering Unconverted Carbon
4,134,824	<u>Union Carbide Corporation:</u> Integrated Process For the Partial Oxidation-Thermal Cracking Of Crude Oil Feedstocks
4,134,907	<u>Hazen Research, Inc.:</u> Process For Enhancing The Fuel Value Of Low BTU Gas
4,135,889	<u>University of Utah:</u> Single Stage, Coal Gasification Reactor
4,135,893	<u>Cogas Development Company:</u> Mixing Method And Device
4,135,968	<u>Weyhaeuser Company:</u> Spent Liquor Treatment
4,137,051	<u>General Electric Company:</u> Grate For Coal Gasifier
4,137,053	<u>Chevron Research Company:</u> Gasification Process
4,140,184	<u>Ira C. Bechtold, 1987 Skyline Vista Dr. La Habra, CA 90631, H. Randall Emmerson, 47 Rockview Dr., Irvine, CA 92715:</u> Method For Producing Hydrocarbons From Igneous Sources
4,140,493	<u>Phillips Petroleum Company:</u> Hydrocarbon Steam Reforming Process
4,140,583	<u>Pioneer Corporation:</u> Processing Of Lignite For Petrochemicals
4,141,695	<u>Texaco, Inc.:</u> Process For Gas Cleaning With Reclaimed Water
4,141,696	<u>Texaco, Inc.:</u> Process For Gas Cleaning With Reclaimed Water And Apparatus For Water Reclamation

- 4,141,794 Occidental Petroleum Corporation: Grid-Wall Pyrolysis Reactor
- 4,145,274 Occidental Petroleum Corporation: Pyrolysis With Staged Recovery
- 4,146,359 Occidental Petroleum Corporation: Method For Reacting Nongaseous Material With A Gaseous Reactant
- 4,146,369 Projektierung Chemische Verfahren Stechnik GmbH, Fed. Rep. Of Germany: Process For Gas Production From Solid Fuels
- 4,146,370 Shell Internationale Research Maatschappij B.V.: Process And Apparatus For The Partial Combustion of Coal Powder
- 4,147,593 Occidental Petroleum Corporation: Flash Pyrolysis Of Organic Solid Waste Employing Ash Recycle
- 4,147,660 Osaka Gas Company, Ltd: Method For Reactivation Of Platinum Group Metal Catalyst With Aqueous Alkaline And/Or Reducing Solutions
- 4,149,856 Willy Keller, Hettlingerstrasse 7,8472 Seuzach, Zurich, Switzerland: Method And Appartus For Producing A Gaseous Fuel By Means Of Solar Energy
- 4,149,859 Shell Internationale Research Maatchappij B.V.: Process For Cooling And Separation Of Dry Particulate Matter From A Hot Gas
- 4,149,971 Krupp-Koppers GmbH Fed. Rep. Of Germany: Two-Stage Process And Apparatus For The Separation Of Tar
- 4,150,953 General Electric Company: Coal Gasification Power Plant And Process
- 4,151,044 Occidental Research Corporation: Process For The Pyrolysis Of Carbonaceous Materials In A Double Helix Cyclone
- 4,151,191 The American Gas Association: Sulfur Resistent Molybdenum Catalysts For Methanation
- 4,153,426 Arthur G. McKee & Company: Synthetic Gas Production
- 4,153,427 The U.S. of America as rep. by the U.S. DoE, Wash. D.C.: Apparatus And Method For Feeding Coal Into A Coal Gasifier
- 4,154,581 Battelle Development Corporation: Two-Zone Fluid Bed Combustion Or Gasification Process
- 4,154,582 General Electric Company: Method Of Solids Discharge From Coal Gasifier Grate

- 4,155,985 Metallgesellschaft Aktiengesellschaft Frankfurt am Main, Fed. Rep. of Germany: Process Of Purifying Gases
- 4,155,990 Hitachi, Ltd.: Process For Removal And Recovery Of Sulfide From Coal Gas
- 4,157,244 Dr. C. Otto & Comp. GmbH, Fed. Rep. of Germany: Gas-Cooling Method And Apparatus
- 4,157,245 Chevron Research Company: Countercurrent Plug-Like Flow Of Two Solids
- 4,157,246 Exxon Research & Engineering Co.: Hydrothermal Alkali Metal Catalyst Recovery Process
- 4,158,552 Combustion Engineering, Inc.: Entrained Flow Coal Gasifier
- 4,158,637 Westinghouse Electric Corp.: Conversion Of Coal Into Hydrocarbons
- 4,158,697 Clean Energy Corporation: Coal Treatment Apparatus
- 4,158,948 Texaco, Inc.: Conversion Of Solid Fuels Into Fluid Fuels
- 4,159,195 Exxon Research & Engineering Co.: Hydrothermal Alkali Metal Recovery Process
- 4,159,201 Krupp-Koppers GmbH, Fed. Rep. of Germany: Process For Producing A Carbon Monoxide-Rich Gas
- 4,159,236 Gulf Oil Corporation: Method For Combining Coal Liquefaction And Gasification Process
- 4,159,237 Gulf Oil Corporation: Coal Liquefaction Process Employing Fuel From A Combined Gasifier
- 4,159,238 Gulf Oil Corporation: Integrated Coal Liquefaction Gasification Process
- 4,160,649 UOP, Inc.: Substituted Natural Gas Via Steam Reforming Of Kerosene
- 4,161,393 Metallgesellschaft Aktiengesellschaft, Frankfurt am Main: Shift Conversion Of Raw Gas From Gasification Of Coal
- 4,161,442 Mobil Oil Corporation: Processing Of Tar Sands
- 4,164,397 Herbert H. Hunt, 3608 Vine Maple, Eugene, Oreg. 97405 & Harold S. Worcester, 91040 Hill Rd., Springfield, Oreg., 97417: Fuel Gas Production
- 4,165,970 Metallgesellschaft Aktiengesellschaft Frankfurt am Main: Process And Apparatus For Gasifying Granular Coal Under Superatmospheric Pressure

II. B. IN VITRO CONVERSION: OBTAINING FUEL GAS

2. APPARATUS

This profile includes the apparatus to carry out the processes described in the preceding profile.

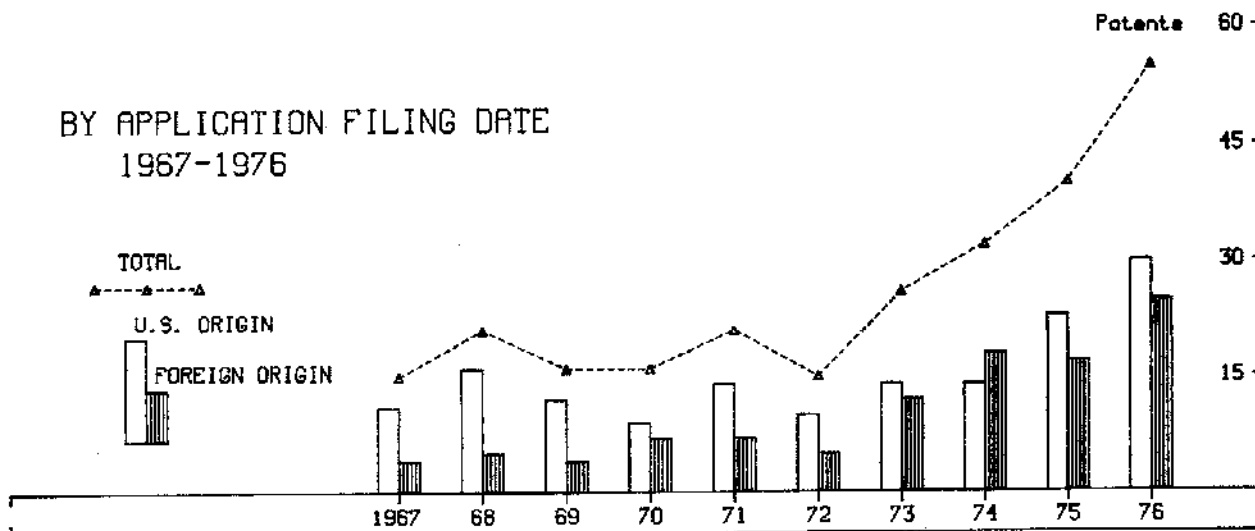
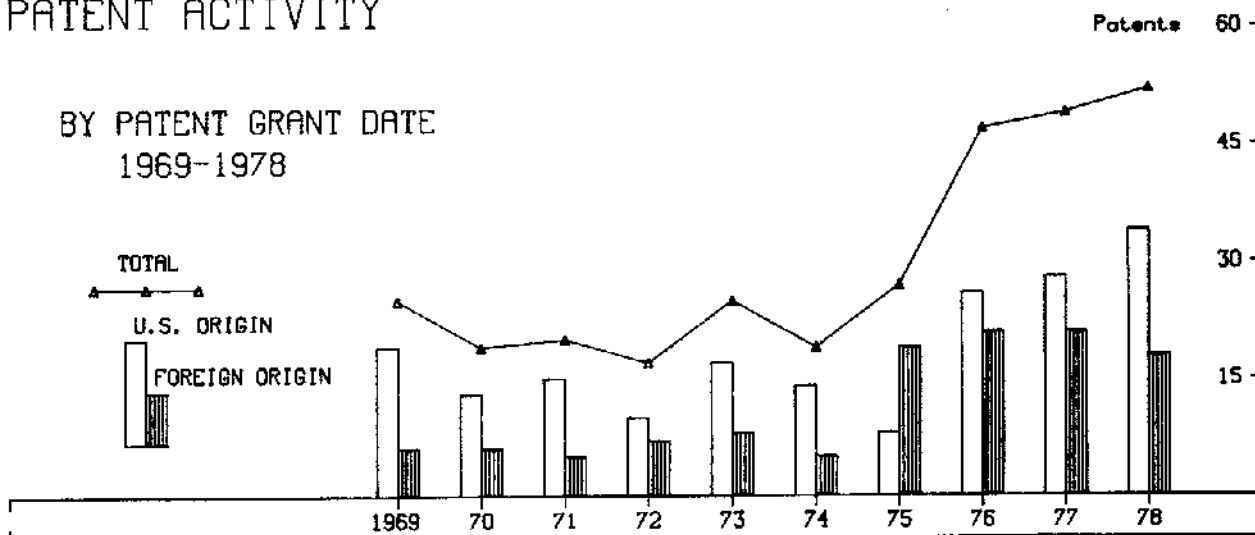
INCLUDED IN THIS PROFILE ARE ALL OF THE PATENTS FROM:

Class 48, Subclasses 61-113 and 118.5

ACTIVITY INDICES (1976-1978)

GROWTH	49.3%
FOREIGN SHARE	40.5%
CORPORATE OWNED	79.0%
GOVERNMENT OWNED	5.4%
U.S. OWNED OF FOREIGN	6.7%

PATENT ACTIVITY



SYNTHETIC FUELS II B 2- IN VITRO - OBTAINING FUEL GAS - APPARATUS

PATENT ACTIVITY (1963-1978) BY DATE OF PATENT GRANT

PAGE A 2

	63-64	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	TOTAL
TOTAL	15	12	13	11	8	25	19	20	17	25	19	27	47	49	52	359
U.S. ORIGIN	7	8	10	7	6	19	13	15	10	17	14	8	26	28	34	222
FOREIGN ORIGIN	8	4	3	4	2	6	6	5	7	8	5	19	21	21	18	137
GERMANY	3	1	1	2			3	1	3	5	1	10	10	14	8	62
UNITED KINGDOM	1	1	1	1		1	2	2			2	2	1		7	22
JAPAN	1	1					1		1	2	1	4	5	4	2	21
FRANCE	1	1			1	2		1	2		1					9
SWEDEN	1							1				2	1	1		5
NETHERLANDS	1							1				1	1	1		5
CANADA	1			1					1							4
SOUTH AFRICA													2			4
PHILIPPINES														1		2
U.S.S.R.			1			1								1		2
POLAND													1			1
CHINA(TAIWAN)										1					1	1
DENMARK															1	1
ITALY						1										1
U.S. ORIGIN	7	8	10	7	6	19	13	15	10	17	14	8	26	28	34	222
U.S. CORP. OWNED	4	5	3	5	3	17	12	12	7	12	11	7	16	19	26	159
U.S. GOVT. OWNED	2	1	1	1	1	1	1	1	1	1			5	1	2	15
U.S. INDIV. OWNED	1	2	6	1	3	1		2	3	4	3	1	5	7	6	46
FOREIGN OWNED	1													1		2
FOREIGN ORIGIN	8	4	3	4	2	6	6	5	7	8	5	19	21	21	18	137
U.S. OWNED	1						1	1		2	1	2	2	2	2	12
FOREIGN OWNED	7	4	3	4	2	6	5	4	7	6	4	17	19	21	16	125
FOREIGN CORP.	6	3	1	3	2	4	2	3	6	5	4	13	18	19	14	103
FOREIGN GOVT.	1	1	2	1		2	3	1	1	1		4	1	2	2	22
FOREIGN INDIV.																

PATENT ACTIVITY (PATENTS GRANTED 1/67-12/78) BY DATE OF PATENT APPLICATION

----- NUMBER OF PATENTED APPLICATIONS -----

	PRE 65	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	TOTAL
TOTAL	14	10	14	15	21	16	16	21	15	26	32	40	55	24	19	319
U.S. ORIGIN	11	5	9	11	16	12	9	14	10	14	14	23	30	19	19	197
FOREIGN ORIGIN	3	5	5	4	5	4	7	7	5	12	18	17	25	5	122	122
GERMANY	1	1	1	1	3	1	3	5	1	6	10	9	15	1	1	57
UNITED KINGDOM	2	2	1	1	1	1	1	1	2	1	1	2	4	3	3	19
JAPAN			1	1			3		1	2	7	2	4			20
FR, ICE		2	1	1	1		1		1	2		1	1			7
SWLJEN																4
NETHERLANDS						1						1	1			4
CANADA		1	1			1										3
SOUTH AFRICA												2				2
PHILIPPINES			1													1
U.S.S.R.												1				1
POLAND																1
CHINA (TAIWAN)								1						1		1
DENMARK																1
ITALY		1														1
U.S. ORIGIN	11	5	9	11	16	12	9	14	10	14	14	23	30	19	19	197
U.S. CORP. OWNED	7	5	8	10	12	10	8	8	8	12	8	14	22	15	15	147
U.S. GOVT. OWNED			1	1	2		1	1			1	4	3			13
U.S. INDIV. OWNED	4				2	2	1	5	2	2	5	4	5	4		36
FOREIGN OWNED												1				1
FOREIGN ORIGIN	3	5	5	4	5	4	7	7	5	12	18	17	25	5	122	122
U.S. OWNED				1		1	1	2	1	1	1	2	1	1	1	11
FOREIGN OWNED	3	5	5	3	5	3	6	5	4	11	18	15	24	4	111	111
FOREIGN CORP.	3	4	3	1	4	1	6	4	4	8	17	13	22	3	93	93
FOREIGN GOVT.																
FOREIGN INDIV.		1	2	2	1	2		1		3	1	2	2	1	18	18

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II.B. IN VITRO CONVERSION - OBTAINING FUEL GAS
2. APPARATUS

ASSIGNEES WITH 2 OR MORE PATENTS (1/69-12/78)

UNITED TECHNOLOGIES CORPORATION	14
EXXON RESEARCH + ENGINEERING CO.	11
GENERAL ELECTRIC COMPANY	8
DR. C. OTTO COMP. G.M.B.H.	8
METALLGESELLSCHAFT AKTIENGESELLSCHAFT	8
SIEMENS AKTIENGESELLSCHAFT	8
UNITED STATES OF AMERICA, DEPARTMENT OF ENERGY	7
BRITISH GAS CORPORATION	7
OCCIDENTAL PETROLEUM CORPORATION	6
TEXAS INSTRUMENTS, INCORPORATED	5
TEXACO DEVELOPMENT CORPORATION	5
KAMYR INC.	5
MITSUI SHIPBUILDING AND ENGINEERING CO. LTD.	5
UNION CARBIDE CORPORATION	4
UNITED STATES OF AMERICA, INTERIOR	4
CALIFORNIA INSTITUTE OF TECHNOLOGY	3
KOPPELMAN, EDWARD	3
INSTITUTE OF GAS TECHNOLOGY	3
GAS COUNCIL	3
ECONO FUEL SYSTEMS, INC.	3
MCDOWELL-WELLMAN ENGINEERING COMPANY	3
NISSAN MOTOR CO., LTD.	3
SUN OIL COMPANY OF PENNSYLVANIA	3
STEAG AG	3*
ALLIED CHEMICAL CORPORATION	2
KINGSFORD COMPANY	2
SHELL OIL COMPANY	2
INGERSOLL-RAND RESEARCH INC.	2
TEXACO INC.	2
COMBUSTION ENGINEERING INC.	2
HEINRICH KOPPERS GMBH	2*
CHEVRON RESEARCH COMPANY	2
CONSOLIDATION COAL COMPANY	2
CHEMICAL CONSTRUCTION CORPORATION	2
TORRAX SYSTEMS, INC.	2
KRUPP KOPPERS GMBH	2
THAGARD TECHNOLOGY COMPANY	2
MOBIL OIL CORPORATION	2
AB MOTALA VERKSTAD	2
UNIVERSITY OF CALIFORNIA, THE REGENTS OF	2
URBAN RESEARCH DEVELOPMENT CORPORATION	2
WESTINGHOUSE ELECTRIC CORP.	2
SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.	2*
RHEINISCHE BRAUNKOHLLENWERKE AG	2*

*Composite total, see Appendix A.

SYNTHETIC FUELS II B 2- IN VITRO - OBTAINING FUEL GAS - APPARATUS
 ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

AB MOTALA VERKSTAD

3884397 - APPARATUS FOR FEEDING MATERIAL TO A GAS GENERATOR
 3994418 - METHOD OF FEEDING MATERIAL TO A GAS GENERATOR

AGENCE NATIONALE DE VALORISATION DE LA RECHERE (ANVAR)
 3945810 - APPARATUS FOR DISPOSAL OF PLASTICS

ALLIED CHEMICAL CORPORATION

3469666 - BICYCLIC AMIDES HAVING HERBICIDAL PROPERTIES
 3770387 - DEFLECTOR

ARTHUR D. LITTLE INC.

3712800 - METHOD FOR CONVERTING RESIDUAL OILS INTO FUEL GAS

ATLANTIC RICHFIELD COMPANY

3620697 - APPARATUS AND METHOD FOR PRODUCING HYDROGEN

BABCOCK + WILCOX CO.

3454383 - GASIFICATION METHOD AND APPARATUS

BATTELLE MEMORIAL INSTITUTE

4044904 - METHOD OF FEEDING PARTICLES FROM A FIRST REGION TO A SECOND REGION

BERGWERKSVERBAND GMBH

4080181 - GAS GENERATOR

BID-GAS CORPORATION

4067401 - METHANE GAS PROCESS AND APPARATUS

BLACK, SIVALLS + BRYSON, INC.

3533739 - COMBUSTION OF SULFUR-BEARING CARBONACEOUS FUEL

BLUE EMBER FLAME CORPORATION

3933618 - GAS GENERATION APPARATUSES AND PROCESSES

BORGREEN, GEORG

3771263 - METHOD FOR DISPOSAL OF REFUSE BY DEGASIFYING AND GASIFICATION THEREOF

BRITISH GAS CORPORATION

3830637 - FLUIDISED BED HYDROGENATION

4071329 - COAL GASIFICATION PLANT

4073627 - COAL GASIFICATION PLANT

4078903 - COAL GASIFICATION

4119411 - COAL GASIFICATION PLANT

4126427 - COAL GASIFICATION PLANT

4129422 - COAL GASIFICATION PLANT

CALIFORNIA INSTITUTE OF TECHNOLOGY

3920416 - HYDROGEN-RICH GAS GENERATOR

3955941 - HYDROGEN RICH GAS GENERATOR

4038133 - START UP SYSTEM FOR HYDROGEN GENERATOR USED WITH AN INTERNAL COMBUSTION ENGINE

SYNTHETIC FUELS II B 2- IN VITRO - OBTAINING FUEL GAS - APPARATUS
ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

PAGE C 2

CATALYTIC GENERATORS, INC.
3951610 - GAS GENERATING APPARATUS

CHEMICAL CONSTRUCTION CORPORATION
3450507 - INTEGRATED REFORMING OF HYDROCARBONS
3531266 - PRODUCTION OF SYNTHETIC METHANOL

CHEMISCHE WERKE HULS, AG
4018621 - METHOD FOR REMOVING SLAG CAKES FROM SYNTHESIZING GAS REACTORS

CHEVRON RESEARCH COMPANY
3759677 - CATALYTIC SYNTHESIS GAS MANUFACTURE
3874116 - SYNTHESIS GAS MANUFACTURE

CHICAGO BRIDGE + IRON COMPANY
3713794 - DIRECT CONTACT LIQUID GASIFIER AND METHOD

CITIES SERVICE COMPANY
3828929 - METHOD FOR RECOVERY OF COAL ENERGY

CLEAN ENERGY CORPORATION
3933128 - STEAM GENERATION WITH COAL

COAL INDUSTRY (PATENTS) LIMITED
4105419 - FLUIDIZED BED APPARATUS

COMBUSTION ENGINEERING INC.
3864100 - METHOD AND APPARATUS FOR GASIFICATION OF PULVERIZED COAL
3920417 - METHOD OF GASIFYING CARBONACEOUS MATERIAL

COMPAGNIE INDUSTRIELLE DE PROCEDES + D APPLICATIONS S.A.
3840345 - SELF AGGLOMERATING FLUIDIZED BED REACTING APPARATUS

CONSOLIDATED NATURAL GAS SERVICE CO. INC.
3820964 - REFUSE GASIFICATION PROCESS AND APPARATUS

CONSOLIDATION COAL COMPANY
3503724 - METHOD AND APPARATUS FOR PRODUCING MIXTURES OF METHANE, CARBON MONOXIDE, AND HYDROGEN
3700421 - APPARATUS FOR CONDUCTING A CONTINUOUS STEAM-IRON PROCESS

DAIMLER-BENZ AKTIENGESELLSCHAFT
4067299 - SPLIT-GAS PRODUCTION FOR INTERNAL COMBUSTION ENGINE

DEUTSCHE GOLD- UND SILBER-SCHNEIDANSTALT VORMALS ROESSLER
3741736 - PROCESS AND DEVICE FOR THE PRODUCTION OF ACETYLENE-ETHYLENE MIXTURES

DICK, E. SAM, CO., INC.
3469956 - STANDBY LIQUEFIED PETROLEUM GAS UNIT

DOW CHEMICAL COMPANY
3429942 - QUENCHING TECHNIQUE FOR HYDROALKYLATION OF ALKYL AROMATIC HYDROCARBON

SYNTHETIC FUELS II B 2- IN VITRO - OBTAINING FUEL GAS - APPARATUS
 ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

DR. C. OTTO COMP. G.M.B.H.
 3951615 - CYLINDRICAL PRESSURE REACTOR FOR PRODUCING A COMBUSTIBLE GAS
 3994700 - APPARATUS FOR THE LOW TEMPERATURE CARBONIZATION OF FINE-GRAIN FUELS
 4013427 - SLAG BATH GENERATOR
 4043766 - SLAG BATH GENERATOR
 4049394 - CONTROL SYSTEM FOR A COAL GASIFICATION PLANT
 4049570 - METHOD AND APPARATUS FOR REMOVING VAPORS AND AEROSOLS FROM GASES PRODUCED IN A GASIFICATION PLANT
 4073628 - CONTROL SYSTEM FOR APPARATUS TO GASIFY FINE-GRAIN FUELS IN A REACTOR
 4098324 - WATER-COOLED, HIGH-TEMPERATURE GASIFIER AND METHOD FOR ITS OPERATION

ECONO FUEL SYSTEMS, INC.
 4023538 - HOT FUEL GAS GENERATOR
 4050419 - HOT FUEL GAS GENERATOR
 4114566 - HOT FUEL GAS GENERATOR

EISENWERK-GESELLSCHAFT MAXIMILIANSHUTTE MBH
 4062657 - METHOD AND APPARATUS FOR DESULPHURIZING IN THE GASIFICATION OF COAL

EKMAN, CARL OSCAR ALEXANDER
 3587489 - FURNACES FOR SOLID FUEL

ENERGY RESEARCH CORPORATION
 4112889 - FUEL SYSTEM AND VAPORIZER FOR INTERNAL COMBUSTION ENGINES

ESSO STANDARD SOCIETE ANONYME FRANCAISE
 3480419 - GASIFICATION OF HYDROCARBONS

EXXON RESEARCH + ENGINEERING CO.
 3661543 - FLUID COKING PROCESS INCORPORATING GASIFICATION OF PRODUCT ORE
 3752658 - INTEGRATED FLUID COKING-GASIFICATION PROCESS
 3759676 - INTEGRATED FLUID COKING/GASIFICATION PROCESS
 3784676 - REMOVING SULPHUR FROM HYDROCARBONS
 3816084 - COKELESS COKER WITH RECYCLE OF COKE FROM GASIFIER TO HEATER
 3870480 - PROCESS AND APPARATUS FOR THE PRODUCTION OF COMBUSTIBLE GASES
 3874739 - METHOD AND APPARATUS FOR THE TRANSFER OF ENTRAINED SOLIDS
 3933445 - PROCESS AND APPARATUS FOR PREVENTING DEPOSITS ON A GAS INLET NOZZLE
 4007093 - FURNACE FOR THERMAL PROCESSING OF LUMP SOLID FUEL
 4055484 - ELUTRIATION IN A FLUID COKING PROCESS
 4062656 - FLUIDIZED BED APPARATUS

FLUOR CORPORATION
 3533784 - REACTOR CONTROL SYSTEM

FOREST FUELS, INC.
 4095958 - APPARATUS AND METHOD FOR PRODUCING COMBUSTIBLE GASES FROM BIOMASS MATERIAL

FOSTER WHEELER CORPORATION
 3825477 - FLUIDIZED BED REACTOR

FOSTER WHEELER ENERGY CORPORATION
 3998608 - PRODUCTION OF HOT CLEAN INDUSTRIALLY USABLE GAS

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

FRIED KRUPP HUTTENWERKE AG
3923466 - APPARATUS FOR THE PRODUCTION OF CRACKED GAS

FRIEDRICH UHDE GMBH
3600141 - TUBE FURNACE FOR RECOVERY OF SYNTHESIS GASES FROM HYDROCARBON CRACKING

FUJI KASUI ENGINEERING CO., LTD.
3997407 - APPARATUS FOR DISPOSAL OF RUBBER WASTE

GAS COUNCIL
3484219 - PROCESS AND APPARATUS FOR PERFORMING CHEMICAL REACTIONS
3591356 - PROCESS FOR THE PRODUCTION OF A GAS CONTAINING GASEOUS HYDROCARBONS
3868226 - REACTION VESSELS

GENERAL ATOMIC COMPANY
3980440 - CATALYST TUBE ASSEMBLY FOR STEAM-HYDROCARBON REFORMER
GENERAL ECOLOGICAL SYSTEMS, INC.
3579320 - PROCESS FOR PRODUCING AND RECOVERING VALUABLE MATERIALS FROM MUNICIPAL WASTE

GENERAL ELECTRIC COMPANY
3541729 - COMPACT REACTOR-BOILER COMBINATION
3607125 - REFORMER TUBE CONSTRUCTION
3812620 - APPARATUS AND PROCESS FOR SEGREGATING AND DECOMPOSING HETEROGENEOUS WASTE MATERIALS
4011059 - SELF-CENTERING TRAVERSING STIRRER SHAFT FOR FIXED BED GASIFIER
4070161 - DOUBLE SEAL GATE VALVE STRUCTURE
4085578 - PRODUCTION OF WATER GAS AS A LOAD LEVELING APPROACH FOR COAL GASIFICATION POWER PLANTS
4098588 - GRATE FOR COAL GASIFIER
4101294 - PRODUCTION OF HOT, SATURATED FUEL GAS

GULF OIL CORPORATION
3971639 - FLUID BED COAL GASIFICATION

HEINRICH KOOPERS GMBH
3873845 - METHOD OF PRODUCING ELECTRIC ENERGY INCLUDING COAL GASIFICATION
3883321 - DEVICE FOR GASIFICATION OF SOLID FUELS

HERCULES INCORPORATED
3736111 - PROCESS AND APPARATUS FOR THE COMPLETE RECLAMATION OF VALUABLE PRODUCTS FROM SOLID WASTE
HOWE-BAKER ENGINEERS INC.
3523770 - FLAME SPLITTING ARRANGEMENT

HUTTENWERK OBERHAUSEN AG., FIRMA
3536455 - PLANT FOR THE PRODUCTION OF METALLURGICAL REDUCING GAS

HYDROCARBON RESEARCH INC.
3775071 - METHOD FOR FEEDING DRY COAL TO SUPERATMOSPHERIC PRESSURE

INGERSOLL-RAND RESEARCH INC.
3976548 - APPARATUS FOR PROCESSING COAL AND LIKE MATERIAL
4106997 - METHODS FOR CONVERTING COAL TO A PLASTIC-LIKE CONDITION AND FEEDING SAME TO A RECEIVER

SYNTHETIC FUELS II B 2- IN VITRO - OBTAINING FUEL GAS - APPARATUS
ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

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INSTITUTE OF GAS TECHNOLOGY

3935825 - COAL ASH AGGLOMERATION DEVICE
4021183 - ARRANGEMENT AND METHOD OF BURNER IGNITION
4023280 - VALVE FOR ASH AGGLOMERATION DEVICE

JAPAN ATOMIC ENERGY RESEARCH INSTITUTE

3898420 - STEAM REFORMER FOR HYDROCARBONS

KAMYR INC.

3950146 - CONTINUOUS PROCESS FOR ENERGY CONSERVING COOPERATIVE COAL FEEDING AND ASH REMOVAL OF CONTINUOUS, PRESSURIZED COAL GASIFI
ERS AND THE LIKE, AND APPARATUS FOR CARRYING OUT THE SAME
3950147 - PROCESS FOR FEEDING COAL TO A FLUIDIZED BED OR SUSPENDED PARTICLE PRESSURIZED PROCESSING CHAMBER AND APPARATUS FOR CARRY
ING OUT THE SAME
4017270 - COAL GASIFICATION PROCESS WITH IMPROVED PROCEDURES FOR CONTINUOUSLY FEEDING LUMP COAL UNDER PRESSURE
4078929 - COAL GASIFICATION PROCESS WITH IMPROVED PROCEDURE FOR CONTINUOUSLY DISCHARGING ASH PARTICLES AND APPARATUS THEREFOR
4125384 - METHOD AND APPARATUS FOR CONTINUOUSLY FEEDING SOLID PARTICLES INTO A PRESSURIZED CONTAINER

KINGSFORD COMPANY

3852048 - PROCESS FOR PRODUCING INDUSTRIAL FUEL FROM WASTE WOODY MATERIALS
3977947 - FLUIDIZED BED CARBONIZATION

KOPPELMAN; EDWARD

4069107 - CONTINUOUS THERMAL REACTOR SYSTEM AND METHOD
4106999 - CONTINUOUS THERMAL REACTOR
4126519 - APPARATUS AND METHOD FOR THERMAL TREATMENT OF ORGANIC CARBONACEOUS MATERIAL

KRAFTWERK UNION AKTIENGESELLSCHAFT

4095959 - COAL GASIFICATION APPARATUS

KRUPP KOPPERS GMBH

3958956 - METHANE PRODUCTION PROCESS AND ARRANGEMENT THEREFOR
4017269 - METHOD AND ARRANGEMENT FOR GASIFYING FINELY DIVIDED FLUIDIZED SOLID COMEUSTIBLE MATERIAL

LACRETA; ANTONIO

4080485 - FUEL SYSTEMS FOR INTERNAL COMBUSTION ENGINES

LA SOCIETE DITE SOCIETE CHIMIQUE DE LA GRANDE

3644100 - APPARATUS FOR REFORMING HEAVY HYDROCARBONS

MARATHON OIL COMPANY

3723067 - PYROLYSIS FURNACE HAVING TRANSVERSE MIXING MEANS IN THE END STACKS

MASCHINENFABRIK AUGSBURG-NURNBERG AKTIENGESELLSCHAFT

3912464 - METHOD OF AND DEVICE FOR SEPARATING SOLID COMPONENTS FROM A HOT COMBUSTIBLE GAS GENERATED IN A REACTOR

MCDOWELL-WELLMAN ENGINEERING COMPANY

3454382 - TWO-STAGE TYPE GAS PRODUCER
3787192 - PROCESS FOR COAL GASIFICATION
3847562 - GAS PRODUCER HAVING ASH REMOVAL PLATES WITH INDIVIDUAL TEMPERATURE SENSING

SYNTHETIC FUELS II B 2- IN VITRO - OBTAINING FUEL GAS - APPARATUS

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

METALLGESELLSCHAFT AKTIENGESELLSCHAFT

- 3902872 - REACTOR FOR GASIFYING COAL UNDER PRESSURE
- 3930811 - REACTOR FOR THE PRESSURE GASIFICATION OF COAL
- 3937620 - PROCESS AND APPARATUS FOR GASIFYING COAL
- 3951616 - APPARATUS FOR THE CONTINUOUS GASIFICATION OF COAL
- 4014664 - REACTOR FOR THE PRESSURE GASIFICATION OF COAL
- 4033730 - PROCESS AND APPARATUS FOR FEEDING PARTICULATE SOLIDS INTO A PRESSURE REACTOR
- 4040800 - REACTOR FOR GASIFYING SOLID FUELS, PARTICULARLY COAL, UNDER SUPERATMOSPHERIC PRESSURE
- 4047901 - FEEDER FOR COAL-GASIFICATION REACTOR

MIDLAND-ROSS CORPORATION

- 3970435 - APPARATUS AND METHOD FOR METHANATION

MITSUBISHI JUKOGYO KABUSHIKI KAISHA

- 4074979 - THERMAL DECOMPOSITION APPARATUS

MITSUJI SHIPBUILDING AND ENGINEERING CO. LTD.

- 3718708 - METHOD AND APPARATUS FOR THERMAL CRACKING AND QUENCHING
- 3729297 - APPARATUS FOR CONTINUOUSLY DECOMPOSING HYDROCARBON IN A HEATING MEDIUM BATH
- 3832151 - PROCESS AND APPARATUS FOR DISPOSAL OF PLASTIC WASTES
- 3907662 - PROCESS OF PREPARING DESULFURIZED LIGHT OIL AND FUEL GAS FROM HEAVY OIL
- 3941681 - PROCESS FOR CONVERTING INFERIOR HEAVY OIL INTO LIGHT OIL AND GASIFYING THE SAME

MITSUJI TOATSU CHEMICALS INC.

- 4115074 - GASIFICATION PROCESS

MOBIL OIL CORPRATION

- 4046522 - PRE-ENGINE CONVERTER FOR USE WITH FUELS CONTAINING OXYGENATED COMPOUNDS
- 4070993 - PRE-ENGINE CONVERTER

MONTECATINI EDISON S.P.A.

- 3462250 - PROCESS AND APPARATUS FOR THE PARTIAL COMBUSTION OF LIQUID HYDROCARBONS TO GASEOUS MIXTURES CONTAINING HYDROGEN AND CARBON MONOXIDE

NATIONAL RESEARCH DEVELOPMENT CORPORATION

- 3962045 - APPARATUS FOR PYROLYSIS OF DOMESTIC AND OTHER WASTE MATERIALS

NIPPON CARBON COMPANY LIMITED

- 3927986 - APPARATUS FOR INCINERATING A PLASTIC WASTE

NIPPON KOKAN KABUSHIKI KAISHA

- 3998606 - METHOD AND APPARATUS FOR MANUFACTURING REDUCING GAS

NIPPON SOKEN, INC.

- 4036180 - FUEL REFORMING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

NISSAN MOTOR CO., LTD.

- 3963000 - SYSTEM FOR REFORMING ENGINE FUEL INTO HYDROGEN GAS-CONTAINING MIXTURE BY CATALYTIC REACTION
- 4059076 - METHOD AND APPARATUS FOR GENERATING REFORMED GAS CONTAINING HYDROGEN AND CARBON MONOXIDE FROM HYDROCARBON FUEL
- 4059415 - APPARATUS FOR REFORMING COMBUSTIBLE INTO GASEOUS FUEL BY REACTION WITH DECOMPOSITION PRODUCT OF HYDROGEN PEROXIDE

SYNTHETIC FUELS II B 2- IN VITRO - OBTAINING FUEL GAS - APPARATUS

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING
 NORTH AMERICAN UTILITY CONSTRUCTION CORPORATION
 3481721 - PROCESS FOR MAKING FUEL GAS

OCCIDENTAL PETROLEUM CORPORATION
 4070250 - PYROLYSIS OF CARBONACEOUS MATERIALS IN A DOUBLE HELIX CYCLONE
 4077847 - SOLID WASTE DISPOSAL SYSTEM
 4083751 - CONTINUOUS FEED PYROLYSIS CHAMBER FOR DECOMPOSING SOLID WASTE
 4088541 - APPARATUS FOR PYROLYZING ORGANIC SOLID WASTE
 4101412 - PROCESS AND APPARATUS FOR RAPID PYROLYSIS OF CARBONACEOUS MATERIALS
 4109502 - SIMPLIFIED LIQUEFACTION PYROLYSIS PROCESS AND APPARATUS THEREFOR

PARAHO CORPORATION
 4116810 - INDIRECT HEATING PYROLYSIS OF OIL SHALE

PHILLIPS PETROLEUM COMPANY
 4003343 - METHOD AND APPARATUS FOR MAINTAINING THE OPERATING TEMPERATURE IN A DEVICE FOR REDUCING ENGINE EXHAUST POLLUTANTS

POLITECHNIKA SLASKA IM WINCENTEGO PSTROWSKIEGO
 3988210 - FURNACE FOR MANUFACTURING HIGH CALORIFIC GAS AND COKE FROM COAL

PULLMAN, INCORPORATED
 3671198 - CRACKING FURNACE HAVING THIN, STRAIGHT SINGLE PASS REACTION TUBES

Q HU L CORPORATION
 4029481 - SELF POWERED BLUE WATER GAS GENERATOR

REINISCHE BRAUNKOHLENWERKE A.G.
 3761233 - METHOD OF GASIFYING WATER CONTAINING COAL

RHEINISCHE BRAUNKOHLENWERKE AG
 3647379 - METHOD OF GASIFYING WATER-CONTAINING COAL

SELAS CORPORATION OF AMERICA
 3607153 - QUENCH ARRANGEMENT

SERVICE NATIONAL DIT GAZ DE FRANCE
 3556750 - PROCESS FOR THE MANUFACTURE UNDER PRESSURE OF GASES WHICH MAY BE SUBSTITUTED FOR NATURAL GASES

SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.
 4022591 - COAL GASIFICATION APPARATUS

SHELL INTERNATIONAL RESEARCH MAATSCHAPPIJ B.V.
 3994701 - METHOD AND APPARATUS FOR FEEDING COMMUNUTED SOLID FUEL INTO PLENUM CHAMBERS

SHELL OIL COMPANY
 3868331 - PROCESS FOR THE PARTIAL COMBUSTION OF HYDROCARBONACEOUS FUELS TO PRODUCE SUBSTANTIALLY SODT-FREE GASES
 3972690 - GASIFICATION PROCESS

SIEGENER AKTIENGESELLSCHAFT GEISWEID
 3658498 - METHOD AND APPARATUS FOR PRODUCING ETHYLENE AND SYNTHESIS GAS BY THERMAL CRACKING

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

SIEMENS AKTIENGESELLSCHAFT

- 3798005 - APPARATUS FOR OBTAINING HYDROGEN
- 3871838 - APPARATUS FOR REACTING VAPORIZED, GASIFIED OR ATOMIZED HYDROCARBON WITH A GAS SERVING AS AN OXYGEN CARRIER
- 3897225 - METHOD AND APPARATUS FOR GENERATING A GAS MIXTURE TO BE FORMED THROUGH CATALYTIC CONVERSION OF FUEL AND A GAS SERVING AS AN OXYGEN CARRIER
- 3954422 - MULTI-STAGE REFORMED-GAS GENERATOR
- 3954423 - QUICK START DEVICE FOR REFORMED-GAS GENERATORS
- 3996025 - APPARATUS FOR DISTRIBUTING FLOWING MEDIA FROM ONE FLOW CROSS SECTION TO A FLOW SECTION DIFFERENT THEREFROM
- 4018573 - REACTOR FOR THE CATALYTIC CONVERSION OF HYDROCARBONS WITH A GAS CONTAINING OXYGEN TO FORM A FUEL GAS
- 4112876 - METHOD AND APPARATUS FOR STARTING UP A GAS GENERATOR FOR CONVERTING HYDROCARBONS INTO A FUEL GAS, AND AN INTERNAL COMBUSTION ENGINE TO BE SUPPLIED WITH THE FUEL GAS

SOCIETE ANONYME ACTIVIT

- 3677727 - PROCESS OF ACTIVATION AND GASIFICATION OF FLUIDISED CARBONACEOUS MATERIALS

SOCIETE DE CONSTRUCTION D APPAREILS POUR GAZ A L EAU

- 3475135 - REFORMING FURNACE FOR PRODUCING SYNTHESIS GAS

STEAG AG

- 3892542 - REACTOR FOR PRESSURE TYPE GASIFICATION OF COAL
- 4111665 - APPARATUS FOR THE GASIFICATION UNDER PRESSURE OF BITUMINOUS COAL, ESPECIALLY OF FINE COAL IN A GENERATOR

STEAG AKTIENGESELLSCHAFT

- 4036606 - METHOD OF CLEANING GASES AND APPARATUS THEREFOR

STOCK EQUIPMENT COMPANY

- 4089429 - APPARATUS FOR INTRODUCING PARTICULATE MATERIAL INTO A VESSEL

STONE + WEBSTER ENGINEERING CORPORATION

- 3593968 - RAPID COOLING FOR HIGH TEMPERATURE GAS STREAMS

STORA KOPPARBERGS BERGSLAGS AB

- 4026679 - APPARATUS FOR AND PROCESS OF CONVERTING CARBONACEOUS MATERIALS CONTAINING SULPHUR TO AN ESSENTIALLY SULPHUR-FREE COMBUSTIBLE GAS

SUN OIL COMPANY OF PENNSYLVANIA

- 3480416 - GAS PREPARATION PROCESS AND APPARATUS
- 3480689 - CRACKING OF HYDROCARBONS
- 3481720 - PROCESS AND APPARATUS FOR THE DISTILLATION OF SOLIDS

SYNGAS RECYCLING CORPORATION

- 4005994 - PROCESS AND APPARATUS FOR CONVERTING SOLID WASTES TO PIPELINE GAS

TEXACO DEVELOPMENT CORPORATION

- 3551347 - OXIDATION PROCESS WITH IMPROVED WASTE HEAT BOILER
- 3565588 - GAS GENERATOR AND WASTE HEAT BOILER INTERCONNECTED SYSTEM
- 3738940 - METHOD OF OPERATING A BURNER FOR THE PARTIAL OXIDATION OF HYDROCARBONS TO SYNTHESIS GAS
- 3743606 - SYNTHESIS GAS GENERATION
- 3847564 - APPARATUS AND PROCESS FOR BURNING LIQUID HYDROCARBONS IN A SYNTHESIS GAS GENERATOR

TEXACO INC.

- 3607157 - SYNTHESIS GAS FROM PETROLEUM COKE
- 3620698 - HYDROGEN AND CARBON MONOXIDE FROM SLURRIES OF SOLID CARBONIFEROUS FUELS

SYNTHETIC FUELS II B 2- IN VITRO - OBTAINING FUEL GAS - APPARATUS
 ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

TEXAS INSTRUMENTS, INCORPORATED

3453146 - METHOD AND APPARATUS FOR REFORMING CARBONACEOUS FUELS AND OPERATING FUEL CELL
 3516807 - APPARATUS FOR PRODUCING HYDROGEN GAS BY THE PARTIAL OXIDATION OF A CARBONACEOUS FUEL CONTAINING HYDROGEN
 3545947 - LIQUID FUEL-AIR PARTIAL OXIDATION SYSTEM
 3619144 - APPARATUS FOR REFORMING HYDROCARBON FUELS TO PRODUCE HYDROGEN
 3685977 - PARTIAL OXIDATION OF HYDROCARBONS

THAGARD TECHNOLOGY COMPANY

4036181 - HIGH TEMPERATURE FLUID-WALL REACTORS FOR TRANSPORTATION EQUIPMENT
 4057396 - FLUID-WALL REACTOR FOR HIGH TEMPERATURE CHEMICAL REACTION PROCESSES

THERMAL RESEARCH + ENGINEERING CORPORATION

3738353 - VAPORIZING APPARATUS

TMC, INC.

4111219 - INDUSTRIAL FUEL BLENDER AND FUEL BLENDING METHOD

TOKYO HEAT TREATING COMPANY

3682605 - METHOD AND APPARATUS FOR SOOT CONTROLLING IN A THERMAL DECOMPOSITION OF A HYDROCARBON GAS

TORRAX SYSTEMS, INC.

3511194 - METHOD AND APPARATUS FOR HIGH TEMPERATURE WASTE DISPOSAL
 3702039 - PRODUCTION OF USABLE PRODUCTS FROM WASTE MATERIAL

TOYOTA JIDOSHA KOGYO KABUSHIKI KAISHA

4008692 - VEHICLE-MOUNTED GASEOUS FUEL GENERATOR

UNDE, FRIEDRICH, G.M.B.H.

3688494 - PROCESS AND APPARATUS FOR HEATING HYDROCARBONS

UNION CARBIDE CORPORATION

3729298 - SOLID REFUSE DISPOSAL PROCESS AND APPARATUS
 3985518 - OXYGEN REFUSE CONVERTER
 4017273 - PYROLYSIS PROCESS FOR CONVERTING REFUSE TO FUEL GAS
 4046541 - SLAG QUENCHING METHOD FOR PYROLYSIS FURNACES

UNITED ENGINEERING + CONSTRUCTORS INC.

3429678 - PROCESS AND APPARATUS FOR MANUFACTURING GAS RICH IN HYDROGEN AND IN OXIDES OF CARBON

UNITED STATES OF AMERICA, DEPARTMENT OF ENERGY

3945809 - METHOD AND APPARATUS FOR REMOVING COARSE UNENRICHED CHAR PARTICLES FROM THE SECOND STAGE OF A TWO-STAGE COAL GASIFIER
 3981690 - AGGLOMERATING COMBUSTOR-GASIFIER METHOD AND APPARATUS FOR COAL GASIFICATION
 3988123 - GASIFICATION OF CARBONACEOUS SOLIDS
 3993450 - ELECTRODE ASSEMBLY FOR A FLUIDIZED BED APPARATUS
 4025317 - HIGH PRESSURE ROTARY PISTON COAL FEEDER FOR COAL GASIFICATION APPLICATIONS
 4071151 - VIBRATORY HIGH PRESSURE COAL FEEDER HAVING A HELICAL RAMP
 4078704 - COAL FEED LOCK

UNITED STATES OF AMERICA, INTERIOR

3463623 - PROCESS FOR GASIFYING CAKING COALS
 3551123 - SYSTEM EMPLOYING COAL AS FUEL IN A STEAM REFORMER
 3565593 - CONVERGING-DIVERGING TYPE GAS-SOLIDS FLUIDIZER AND METHOD OF USE

SYNTHETIC FUELS II B 2- IN VITRO - OBTAINING FUEL GAS - APPARATUS

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING
(CONTINUED)

UNITED STATES OF AMERICA, INTERIOR

3746522 - GASIFICATION OF CARBONACEOUS SOLIDS

UNITED STATES OF AMERICA, NATIONAL AERONAUTICS AND SPACE ADM

3982910 - HYDROGEN-RICH GAS GENERATOR

UNITED TECHNOLOGIES CORPORATION

3445594 - METHOD FOR GENERATING HYDROGEN-CONTAINING FEEDSTOCKS
3476534 - HYDROGEN GENERATOR INCLUDING DESULFURIZATION WITH LOW PRESSURE HYDROGEN FEEDBACK
3475535 - HYDROGEN GENERATOR INCLUDING DESULFURIZATION WITH DIFFUSED HYDROGEN FEEDBACK
3480417 - HYDROGEN GENERATOR INCLUDING A DESULFURIZER EMPLOYING A FEEDBACK EJECTOR
3522019 - APPARATUS FOR GENERATING HYDROGEN FROM LIQUID HYDROGEN-CONTAINING FEEDSTOCKS
3531263 - INTEGRATED REFORMER UNIT
3540854 - METAL-WATER FUELED REACTOR FOR GENERATING STEAM AND HYDROGEN
3635682 - FUEL CELL REACTOR-BURNER ASSEMBLY
3909299 - FUEL CELL SYSTEM INCLUDING REFORM REACTOR
3962411 - METHOD FOR CATALYTICALLY CRACKING A HYDROCARBON FUEL
4071330 - STEAM REFORMING PROCESS AND APPARATUS THEREFOR
4098587 - COMPACT MULTI-TUBE CATALYTIC REACTION APPARATUS
4098588 - MULTI-TUBE CATALYTIC REACTION APPARATUS
4098589 - CATALYTIC REACTION APPARATUS

UNIVERSITY OF CALIFORNIA, THE REGENTS OF

3639111 - METHOD AND APPARATUS FOR PREVENTING FORMATION OF ATMOSPHERIC POLLUTANTS IN THE COMBUSTION OF ORGANIC MATERIAL
3718446 - POLLUTANT-FREE PROCESS FOR PRODUCING A CLEAN BURNING FUEL GAS FROM ORGANIC-CONTAINING WASTE MATERIALS

URBAN RESEARCH DEVELOPMENT CORPORATION

3926582 - METHOD AND APPARATUS FOR PYROLYTIC TREATMENT OF SOLID WASTE MATERIALS
3956076 - PYROLYTIC TREATMENT OF SOLID WASTE MATERIALS TO FORM CERAMIC PRILLS

WALLACE-ATKINS OIL CORPORATION

4038152 - PROCESS AND APPARATUS FOR THE DESTRUCTIVE DISTILLATION OF WASTE MATERIAL

WALLACE ENERGY CONVERSION, INC.

4118282 - PROCESS AND APPARATUS FOR THE DESTRUCTIVE DISTILLATION OF HIGH MOLECULAR WEIGHT ORGANIC MATERIALS

WASHINGTON GAS LIGHT COMPANY

3607154 - REFRACTORY BED FOR GAS MACHINE AND PROCESS FOR PRODUCING OIL GAS

WELLMAN INCANDESCENT FURNACE COMPANY LIMITED

3527586 - PRODUCTION OF FUEL GAS

WESTINGHOUSE ELECTRIC CORP.

3804606 - APPARATUS AND METHOD FOR DESULFURIZING AND COMPLETELY GASIFYING COAL
3847563 - MULTI-STAGE FLUIDIZED BED COAL GASIFICATION APPARATUS AND PROCESS

WHIRLPOOL CORPORATION

3469947 - ATMOSPHERE GENERATOR

WILPUTTE CORPORATION

4131435 - AUTOMATIC CONTROL APPARATUS FOR OIL GAS MACHINE OPERATION

SYNTHETIC FUELS II B 2 - IN VITRO - OBTAINING FUEL GAS - APPARATUS UNASSIGNED PATENTS (1/75-12/78) INVENTORS (ALPHA LISTING)

INVENTOR NAME	STREET	CITY	ST	ZIP/CNTRY
BAUER	4057400 - APPARATUS FOR THE GASIFICATION UNDER PRESSURE OF BITUMINOUS COAL ESPECIALLY OF FINE COAL IN A GENERATOR	D-4900 ESSEN		DT
	UOCHEN ROSASTR. 61			
BRIMHALL	4050907 - ORGANIC WASTE TREATING AND CONVERSION SYSTEM	HALF MOON BAY	CA	94109
CAUGHEY	4030895 - APPARATUS FOR PRODUCING COMBUSTIBLE GASES FROM CARBONACEOUS MATERIALS	ANTRIM	NH	03440
FLEMING	4002438 - ORGANIC CONVERSION SYSTEM	FOUNTAIN VALLEY	CA	92708
GOLD	3985520 - GASIFICATION PROCESS AND APPARATUS	WASHINGTON	DC	20007
GOLD	4004895 - COAL REACTOR	WASHINGTON	DC	20007
HAMRICK	4024912 - HYDROGEN GENERATING SYSTEM	ROANOKE	VA	24014
KAIMANN	4057400 - APPARATUS FOR THE GASIFICATION UNDER PRESSURE OF BITUMINOUS COAL ESPECIALLY OF FINE COAL IN A GENERATOR	D-4300 ESSEN		DT
KEMP	3945890 - CONVERTER SYSTEM	SANTA BARBARA	CA	93105
KUN-MING	4106914 - SAFETY FUEL GAS AND APPARATUS FOR GENERATING THE SAME	CHUNG LI		TW
KUNII	3912465 - CONTINUOUS CARBONIZATION AND GASIFICATION OF PARTICULATE COAL WITH DOUBLE RECIRCULATION OF FLUIDIZED PARTICULATE HEAT CARRIER	MEGURO, TOKYO		JA
KUNUGI	3912465 - CONTINUOUS CARBONIZATION AND GASIFICATION OF PARTICULATE COAL WITH DOUBLE RECIRCULATION OF FLUIDIZED PARTICULATE HEAT CARRIER	MINATO, TOKYO		JA
LINDSTROM	3918412 - FUEL TREATMENT FOR COMBUSTION ENGINES	S-18363 TABY		SW
LIVEMORE	3970436 - GAS PRODUCER ARRANGEMENTS	PARKMORE, SANDTON, T		ZA
PASTERNAK	4057400 - APPARATUS FOR THE GASIFICATION UNDER PRESSURE OF BITUMINOUS COAL ESPECIALLY OF FINE COAL IN A GENERATOR	D-4390 GLADBECK		DT
REED	4058205 - APPARATUS FOR TREATING OIL SHALE	HOUSTON	TX	77024
ROSE	4024912 - HYDROGEN GENERATING SYSTEM	ROCKY MOUNT	VA	24261

UNASSIGNED PATENTS (1/75-12/78) INVENTORS (ALPHA LISTING)

INVENTOR NAME	STREET	CITY	ST	ZIP/CNTRY
SADLER	JOHN H. 16 LAKESIDE LA.	BOLTON	CT	06040
SCHLADITZ	HERMANN J. PLANTSCHWEG 74	MUNICH 60	DE	
SCHLADITZ	HERMANN J. PLANTSCHWEG 74	MUNICH	DT	
SQUIRES	ARTHUR M. 245 W. 104 ST.	NEW YORK	NY	10025
VESTAL	GEORGE W. RT. 4, BOX 238	DENTON	TX	76201
VROOMAN	RICHARD A. 22628-67TH WEST	EDMONDS	WA	98020
WAGNER	JOHANN SANDSTRASSE 1/V	8500 NURNBERG	DT	

PATENTS (1/63-12/78) WITH NEITHER ASSIGNMENT NOR INVENTOR INFORMATION IN DATABASE

3439998	- APPARATUS FOR PRODUCING COMBUSTIBLE GAS									
3469944	- PROGRESS AND APPARATUS FOR THE MANUFACTURE OF HYDROGEN									
3475916	- VAPORIZER									
3497335	- UNDERGROUND GASIFICATION OF COAL									
3518035	- DEVICE FOR PRODUCING AN EXHAUST GAS-OIL MIXTURE TO/ BE SUPPLIED TO A MAIN BURNER OF A NOZZLE-FREE OIL-GASIFYING BURNER INSTALLATION									
3524734	- DEVICE FOR PROMOTING PERFECT COMBUSTION OF LIQUEFIED PETROLEUM GAS FOR USE IN CARS									
3556749	- GENERAL ELECTRIC COMPANY APPARATUS AND METHOD FOR THE HYDROGENATION OF COAL									
3565594	- GASOLINE VAPOR GENERATOR									
3578416	- HIGH TEMPERATURE REACTOR									
3597327	- PROCESS FOR PYROLYZING A SOLID OR LIQUID HYDROCARBONACEOUS FUEL IN A FLUIDIZED BED									
3649250	- OIL VAPORIZER									
3664646	- CARBURATOR VAPOR SUPERHEATER									
3668120	- TREATMENT OF ORGANIC WASTE PRODUCTS									
3697256	- METHOD OF INCINERATING REFUSE									
3728092	- PETROLEUM OIL VAPORIZER									
3734833	- LOW SULPHUR FUEL SYSTEM									
3746521	- GASIFICATION METHOD AND APPARATUS									
3761359	- METHOD AND APPARATUS FOR HEAT-TREATING MATERIALS									
3778240	- COKING PREVENTION SYSTEM									
3787292	- APPARATUS FOR PYROLYSIS OF WASTES									
3841851	- PROCESS AND APPARATUS FOR THE GASIFICATION OF ORGANIC MATTER									
3853498	- PRODUCTION OF HIGH ENERGY FUEL GAS FROM MUNICIPAL WASTES									
3975913	- GAS GENERATOR AND ENHANCED ENERGY CONVERSION SYSTEMS									
3079325	3085362	3088816	3104956	3107719	3117838	3117848	3120430	3131037	3142541	3144312
3151198	3156544	3157468	3164450	3170017	3174833	3175890	3184395	3192018	3197293	3204942
3218998	3226204	3226212	3227427	3230059	3236604	3253906	3254976	3257180	3261762	3273983
3291572	3291573	3291582	3294381	3297777	3306273	3311460	3314767	3322521	3323873	3325253
3350176	3353922	3357896	3362887	3376115	3383228	3384467	3390971	3398058	3404078	3838536

ILB. IN VITRO CONVERSION: OBTAINING FUEL GAS
2. APPARATUS

PATENTING UPDATE (1/79-8/79)

<u>Patent No.</u>	<u>Assignee & Title</u>
4,134,738	<u>Foster Wheeler Energy Corporation:</u> Automated Poking System For Coal Gasifier
4,134,739	<u>Siemens Akteingesellschaft:</u> Starting Device For A Reformed Gas Generator
4,135,885	<u>Wormser Engineering, Inc.:</u> Burning And Desulfizing Coal
4,135,889	<u>University of Utah:</u> Single Stage, Coal Gasification Reaction
4,137,051	<u>General Electric Company:</u> Grate For Coal Gasifier
4,137,052	<u>Anthony A. du Pont, 12 Outrider Rd., Rolling Hills, CA 90274, & Joseph A. Connell, 24815 S. Normandie Ave., Harbor City, CA 90710:</u> Apparatus And System For Producing Coal Gas
4,141,694	<u>Technology Application Services Corporation:</u> Apparatus For The Gasification Of Carbonaceous Matter By Plasma Arc Pyrolysis
4,142,867	<u>Karl Kiener, 7081 Goldshofe, Ostalbkreis, Germany:</u> Apparatus For The Production Of Combustible Gas
4,142,868	<u>The U.S. of America, As Rep. By the U.S. DoE, Wash. D.C.:</u> Wear Compensating Seal Means For Rotary Piston Coal Feeder
4,145,998	<u>Econo Fuel Systems, Inc.:</u> Hot Fuel Gas Generator
4,146,359	<u>Occidental Petroleum Corporation:</u> Method For Reacting Nongaseous Material With A Gaseous Reactant
4,146,370	<u>Shell Internationale Research Maatschappij B.V.:</u> Process And Apparatus For The Partial Combustion Of Coal Powder
4,149,856	<u>Willy Keller, Hettlingerstrasse 7, 8472 Switzerland:</u> Method And Apparatus For Producing A Gaseous Fuel By Means Of Solar Energy
4,149,939	<u>Salem Corporation:</u> Method And Apparatus For Feeding An Oxidant Within A Furnace Enclosure

- 4,150,759 United States of America as rep. by The U.S. DoE, Wash. D.C.: Solids Feeder Apparatus
- 4,150,953 General Electric Company: Coal Gasification Power Plant And Process
- 4,150,954 Daimler-Benz Aktiengesellschaft, Fed. Rep. Of Germany: Split Gas Generator
- 4,151,044 Occidental Research Corporation: Process For The Pyrolysis Of Carbonaceous Materials In A Double Helix Cyclone
- 4,152,122 Syngas International, Ltd: Apparatus For The Production Of Methane Containing Gas By Hydrogasification
- 4,153,426 Artam G. McKee & Co.: Synthetic Gas Production
- 4,153,427 United States of America as rep. by the U.S. DoE, Wash. D.C.: Apparatus And Method For Feeding Coal Into A Coal Gasifier
- 4,155,720 The Broken Hill Proprietary Company, Ltd.: Apparatus For The Production Of Gaseous Mixtures
- 4,157,244 Dr. C. Otto & Comp. GmbH, Fed. Rep. Of Germany: Gas Cooling Method And Apparatus
- 4,157,896 Horizons Research Incorporated: Apparatus For The Production Of Carbon Monoxide And Hydrogen
- 4,157,958 Bernard H. Chow, 6340 Morazgan St., North Highlands, CA 95660: Inverted Vessel Processing Method For The Production Of Methane Gas
- 4,158,697 Clean Energy Corporation: Coal Treatment Apparatus
- 4,159,447 Dr. C. Otto & Comp. GmbH, Fed. Rep. of Germany: System For Detecting Faults In The Wall Of A High-Temperature Pressure Vessel
- 4,162,943 Occidental Petroleum Corporation: Slot Pyrolysis Reactor & Method Of Pyrolysis
- 4,164,397 Herbert H. Hunt, 3608 Vine Maple, Eugene, Oreg., 97405 & Harold S. Worcester, 91040 Hill Rd., Springfield, Oreg. 97417: Fuel Gas Production
- 4,165,970 Metallgesellschaft Akteingesellschaft, Germany: Process And Apparatus Gasifying Granular Coal Under Superatmospheric Pressure
- 4,165,971 Projektierung Chemische Verfahrenstechnik, GmbH Fed. Rep. Of Germany: Apparatus For The Gasification Of Carbonaceous Material